

**RECOMBINANT FUSION PROTEINS WITH HIGH
AFFINITY
BINDING TO GOLD AND APPLICATIONS THEREOF**

ABSTRACT OF THE DISCLOSURE

The present invention provides a method to firmly attach any polypeptide to a gold surface regardless of its intrinsic gold-binding properties. The method describes the production of recombinant fusion proteins consisting of polypeptides of interest and a high affinity gold binding peptide consisting of 1 to 7 repeats of a unique amino acid sequence. By this method, many biologically active polypeptides lacking intrinsic gold binding properties can be firmly attached to gold surfaces. The disclosure includes evidence that fusion proteins containing the gold-binding sequences provide superior stability and activity compared to similar molecules lacking the tag when used to construct biosensors. The invention provides a method that is a significant improvement over existing chemical and physical adsorption protocols to attach polypeptides to gold and, therefore, can provide benefits to many applications utilizing gold.